

Standard Normal Distribution and Z Score

The standard normal distribution, also called the z-distribution, is a special normal distribution where the mean is 0 and the standard deviation is 1.

Any normal distribution can be standardized by converting its values into z scores. Z scores tell you how many standard deviations from the mean each value lies.

How to calculate a z score

To standardize a value from a normal distribution, convert the individual value into a z-score:

1. Subtract the mean from your individual value.
2. Divide the difference by the standard deviation.

Z-score formula	Explanation
$z = \frac{x - \mu}{\sigma}$	<ul style="list-style-type: none">• x = individual value• μ = mean• σ = standard deviation

Example

Lets consider a data with mean = 3 and standard deviation = 1

X	Standardized X
1	-2
2	-1
3	0
4	1
5	2